CLAIMS

1. Artificial or modified natural blood flow tubing having helical-flow inducing means adapted to induce helical flow in such fashion as to eliminate or reduce turbulence.

2. Tubing according to claim 1, having internal helical grooving and/or ridging.

3. Tubing according to claim 1 or claim 2, having internal, multi-start grooving and/or ridging.

4. Tubing according to claim 1, of non-circular cross-section, twisted.

5. Tubing according to claim 4, of synthetic or other thermoplastic or plastifiable and re-settable material, being plastified and reset in twisted condition.

6. Tubing according to any one of claims 1 to 5, having a helical formation having a constant helix angle along at least a part of its length.

7. Tubing according to any one of claims 1 to 6, having a helical formation having a reducing or increasing helix angle over at least part of its length.

8. Tubing according to any one of claims 1 to 7, having a helical formation with a helix angle between 5° and 50°.

9. Tubing according to claim 8, in which the helix angle is 16°.

10. Tubing according to any one of claims 1 to 9, having grooving and/or ridging tapering in the direction of flow and/or in the opposite direction.

11. Tubing according to any one of claims 1 to 10, in which the helical-flow inducing means comprise a bio-compatible insert.

12. Tubing according to claim 11, in which the insert comprises helical vane means, in the form of fan or propeller blades or which comprise elongated spiral projections from the inner surface of a cylindrical insert.

13. Blood flow tubing according to any preceding claim, having a branched structure in which the flow is from a first branch into two second branches in which helical-flow inducing means are provided where the tubing branches so as to eliminate or reduce turbulence upstream and/or downstream from the first branch.

14. A method for making blood flow tubing comprising forming the tubing on a mandrel which has helical grooving and/or ridging at least over part of its length.

15. A method according to claim 14, in which the tubing is formed by coagulation casting.

16. A method according to claim 14, in which the tubing is formed as cylindrical tubing, and a helical formation is imparted thereto by wrapping with a thread.

17. A method according to claim 16, in which the tubing and/or thread comprise thermoplastic material and the tube is heat set to remain stable in the helical formation.

18. A method for making blood flow tubing comprising forming a non-circular section tube with a twisted cross-section.

19. A method according to claim 18, in which the tube is formed with a non-twisted section, then twisted and set in the twisted configuration.

20. Tubing according to any one of claims 1 to 13, or made by a method of any one of claims 14 to 19, adapted for use as a vascular prosthesis.

21. Tubing according to claim 20, when used as a vascular prosthesis.

22. A method of treatment of the human or animal body comprising implanting tubing according to claim 20.

23. A method according to claim 22, comprising confirming the helical-flow inducing effect of implanted tubing by measurement of a rotational component of flow after implant.

24. A method according to claim 23, in which the measurement is carried out using MRI, or Döppler ultrasound.

25. A method for use in designing tubing for implant in various locations of a cardio-vascular system involving taking measurements of rotational flow in such locations in a healthy population in order to determine a typical flow, and designing

tubing to produce such flow in such locations as by mathematical modelling or trial and error.

26. A method for use in selecting tubing for implant in various locations of a cardio-vascular system of a patient involving taking measurements of rotational flow in such locations in said patient in order to determine flow, and selecting tubing to produce such flow in such locations.

27. A method according to either of claim 25 or claim 26, with fine tuning of the design or selection by after-care measurement comparing predicted with actual flows to improve subsequent prostheses.

28. Tubing according to any one of claims 1 to 13 or made by a method of any one of claims 14-19, adapted for use in blood treatment or delivery equipment.

29. Blood treatment or delivery equipment comprising tubing according to claim 28.

30. Equipment according to claim 29, comprising a heart-lung machine.

31. Equipment according to claim 29, comprising dialysis equipment.

32. Equipment according to claim 29 comprising a giving set.

33. An intravascular stent having spiral-flow inducing properties.

34. A stent according to claim 33, being an expansible mesh material stent which is inserted by catherisation in collapsed form and which becomes expanded on release from the catheter, the stent having an internal spiral formation after expansion.

35. A stent according to claim 34, of which the mesh material comprises segments extending helically around the periphery of the stent and the internal spiral formation comprises vane members attached to such segments.

36. An insert such as an intravascular stent having a helical formation to induce spiral flow and being adjustable.

37. An insert according to claim 36, in which a flexible vane arrangement on a rigid support has a spiral flow inducer vane with an adjustable helix angle.

38. Tubing having helical-flow inducing means adapted to induce helical flow in such fashion as to eliminate or reduce turbulence.

39. Tubing having helical-flow inducing means adapted to induce helical flow in such fashion as to eliminate or reduce dead flow regions.

40. Tubing according to claim 38 or claim 39, having internal helical ridging or grooving.

41. Tubing according to any one of claims 38 to 40, used in plant for delivering slurries or suspensions of solids in liquids.

42. Tubing according to any one of claims 38 to 40, used e.g. as pipeline for delivering viscous liquids such as oils.

43. Tubing according to any one of claims 38 to 42, having helical-flow inducing means at least at interfaces with supply or storage vessels, and at branches.

44. Tubing according to any one of claims 38 to 43, in which the helical-flow inducing means comprise active flow rotating means.

45. Tubing according to claim 44, in which the active flow rotating means comprise driven vanes.

46. Tubing according to claim 44 or claim 45, in which active flow rotating means are situated at intervals along a flowline.